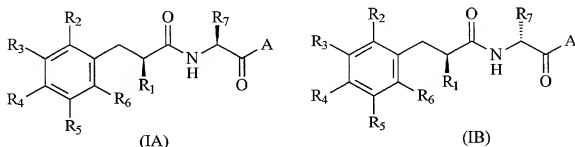


THAT WHICH IS CLAIMED IS:

1. A method for controlling a pest, comprising administering to said pest a pesticidally effective amount of a pesticidal compound of **Formula IA** or **Formula IB**:



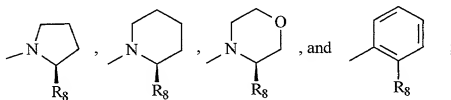
wherein:

R_1 is $-H$, $-NH_2$, or $-OH$;

R_2 , R_3 , R_4 , R_5 , and R_6 are each independently selected from the group consisting of H , halogen, hydroxyl, alkyl, alkylhydroxy, alkoxy, or phenyl; or a pair of R_2 and R_3 , R_3 and R_4 , R_4 and R_5 , and R_5 and R_6 together are $-(CH_2)_4-$ to form a naphthyl group;

R_7 is H , alkyl, phenyl, alkylphenyl, or alkylcarboxy; and

A is selected from the group consisting of:



wherein R_8 is H , alkylhydroxy, or carboxy;

subject to the proviso that at least one of R_7 and R_8 is carboxy or alkylcarboxy;

and subject to the proviso that when R_1 is $-NH_2$, then one of R or R_8 is not carboxy or alkylcarboxy.

2. A method according to claim 1, wherein said pest is an insect pest.

3. A method according to claim 1, wherein said pest is an insect selected from the group consisting of coleopterans, lepidopterans, and dipterans.

4. A method according to claim 1, wherein said pest is a blood-sucking insect.

5. A method according to claim 1, wherein said pest is an insect of the suborder Nematocera.

6. A method according to claim 1, wherein said pest is an insect of the family Colicidae.

7. A method according to claim 1, wherein said pest is an insect of a subfamily selected from the group consisting of Culicinae, Corethrinae, Ceratopogonidae and Simuliidae.

8. A method according to claim 1, wherein said pest is an insect of a genus selected from the group consisting of *Culex*, *Theobaldia*, *Aedes*, *Anopheles*, *Aedes*, *Forcipomyia*, *Culicoides* and *Helea*.

9. A method according to claim 1, wherein said pest is an insect species selected from the group consisting of: *Aedes aegypti*, *Culex quinquefasciatus*, *Anopheles albimanus*, *Anopheles quadrimaculatus*, *Lutzomyia anthrophora*, *Culicoides variipennis*, *Stomoxys calcitrans*, *Musca domestica*, *Ctenocephalides felix*, and *Heliothis virescens*.

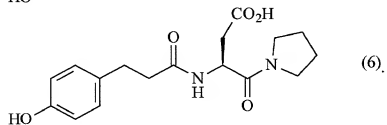
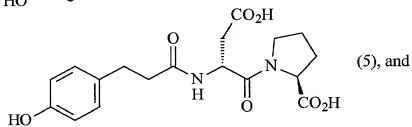
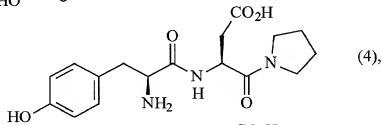
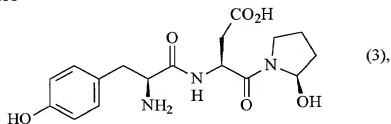
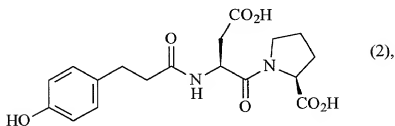
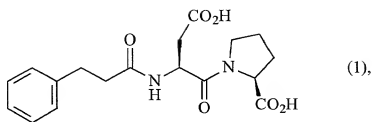
10. A method according to claim 1, wherein said pest is selected from the group consisting of flies, fleas, ticks, and lice.

11. A method according to claim 1, wherein said pest is a mosquito.

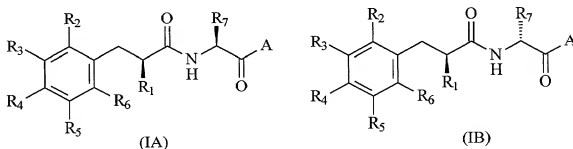
12. A method according to claim 1, wherein said pest is selected from the group consisting of beetles, caterpillars, and mites.

13. A method according to claim 1, wherein said pest is selected from the group consisting of ants and cockroaches.

14. A method according to claim 1, wherein said compound of **Formula IA** or **Formula IB** is selected from the group consisting of:



15. A method of initiating a TMOF receptor-mediated biological response, comprising contacting to a TMOF receptor *in vivo* or *in vitro* for a time and in an amount sufficient to initiate a TMOF receptor-mediated biological response a compound of **Formula IA** or **Formula IB**:



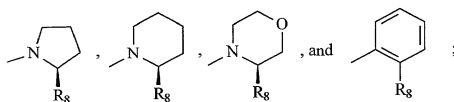
wherein:

R_1 is -H, -NH₂, or -OH;

R_2 , R_3 , R_4 , R_5 , and R_6 are each independently selected from the group consisting of H, halogen, hydroxyl, alkyl, alkylhydroxy, alkoxy, or phenyl;
or a pair of R_2 and R_3 , R_3 and R_4 , R_4 and R_5 , and R_5 and R_6 together are - (CH₂)₄- to form a naphthyl group;

R_7 is H, alkyl, phenyl, alkylphenyl, or alkylcarboxy; and

A is selected from the group consisting of:



wherein R_8 is H, alkylhydroxy, or carboxy;

subject to the proviso that at least one of R_7 and R_8 is carboxy or alkylcarboxy;

and subject to the proviso that when R_1 is -NH₂, then one of R or R_8 is not carboxy or alkylcarboxy.

16. A method according to claim 15, wherein said biological response is inhibition of biosynthesis of a digestive enzyme.

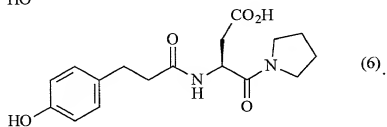
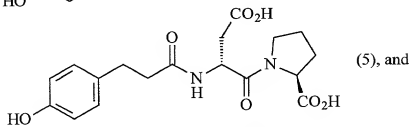
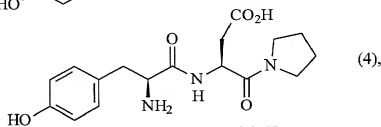
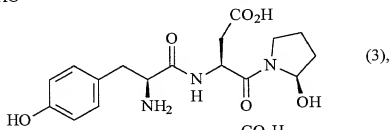
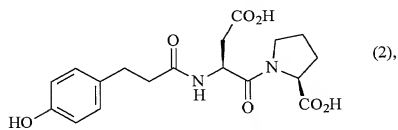
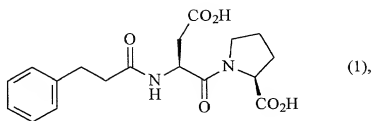
17. A method according to claim 15, wherein said digestive enzyme is trypsin.

18. A method according to claim 15, wherein said contacting step is carried out *in vivo* in an insect pest.

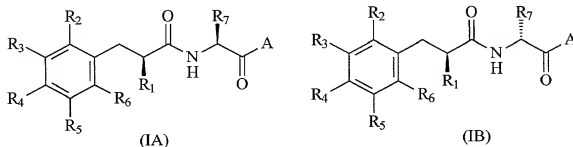
19. A method according to claim 15, wherein said compound is selected from the group consisting of:

$\begin{pmatrix} a \\ b \end{pmatrix}$
 $\begin{pmatrix} c \\ d \end{pmatrix}$
 $\begin{pmatrix} e \\ f \end{pmatrix}$
 $\begin{pmatrix} g \\ h \end{pmatrix}$
 $\begin{pmatrix} i \\ j \end{pmatrix}$
 $\begin{pmatrix} k \\ l \end{pmatrix}$
 $\begin{pmatrix} m \\ n \end{pmatrix}$
 $\begin{pmatrix} o \\ p \end{pmatrix}$
 $\begin{pmatrix} q \\ r \end{pmatrix}$
 $\begin{pmatrix} s \\ t \end{pmatrix}$
 $\begin{pmatrix} u \\ v \end{pmatrix}$
 $\begin{pmatrix} w \\ x \end{pmatrix}$
 $\begin{pmatrix} y \\ z \end{pmatrix}$
 $\begin{pmatrix} a \\ b \end{pmatrix}$
 $\begin{pmatrix} c \\ d \end{pmatrix}$
 $\begin{pmatrix} e \\ f \end{pmatrix}$
 $\begin{pmatrix} g \\ h \end{pmatrix}$
 $\begin{pmatrix} i \\ j \end{pmatrix}$
 $\begin{pmatrix} k \\ l \end{pmatrix}$
 $\begin{pmatrix} m \\ n \end{pmatrix}$
 $\begin{pmatrix} o \\ p \end{pmatrix}$
 $\begin{pmatrix} q \\ r \end{pmatrix}$
 $\begin{pmatrix} s \\ t \end{pmatrix}$
 $\begin{pmatrix} u \\ v \end{pmatrix}$
 $\begin{pmatrix} w \\ x \end{pmatrix}$
 $\begin{pmatrix} y \\ z \end{pmatrix}$

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20. A pest control composition comprising a pesticidal carrier and a pesticidal compound of **Formula IA** or **Formula IB**:



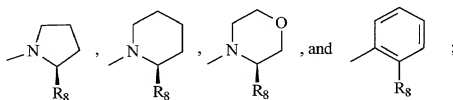
wherein:

R₁ is -H, -NH₂, or -OH;

R₂, R₃, R₄, R₅, and R₆ are each independently selected from the group consisting of H, halogen, hydroxyl, alkyl, alkylhydroxy, alkoxy, or phenyl;
or a pair of R₂ and R₃, R₃ and R₄, R₄ and R₅, and R₅ and R₆ together are - (CH₂)₄- to form a naphthyl group;

R₇ is H, alkyl, phenyl, alkylphenyl, or alkylcarboxy; and

A is selected from the group consisting of:



wherein R₈ is H, alkylhydroxy, or carboxy;

subject to the proviso that at least one of R₇ and R₈ is carboxy or alkylcarboxy;

and subject to the proviso that when R₁ is -NH₂, then one of R₇ or R₈ is not carboxy or alkylcarboxy.

21. A composition according to claim 20, wherein said composition is a liquid composition.

22. A composition according to claim 20, wherein said pesticidal carrier is included in said composition in an amount from 0.1% to 99.9999% by weight.

23. A composition according to claim 20, wherein said pesticidal carrier comprises an aqueous solution.

24. A composition according to claim 20, wherein said pesticidal carrier comprises an organic solvent.

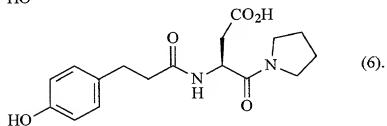
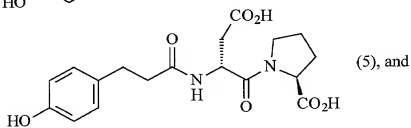
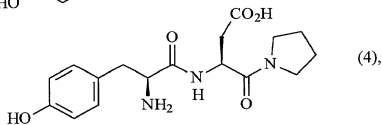
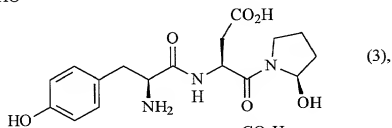
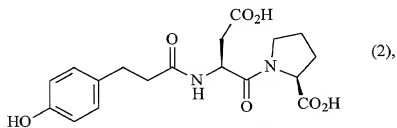
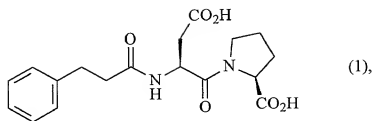
25. A composition according to claim 20, wherein said pesticidal carrier comprises an emulsion.

26. A composition according to claim 20, wherein said composition is a solid composition.

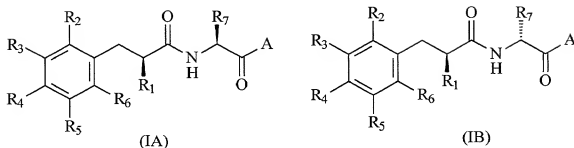
27. A composition according to claim 20, wherein said composition is a bait granule.

28. A composition according to claim 20, wherein said compound of **Formula IA** or **Formula IB** is selected from the group consisting of:

- 33 -



29. A compound of **Formula IA** or **Formula IB**:



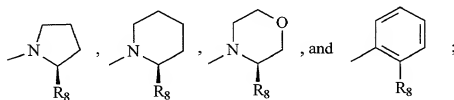
wherein:

R_1 is $-H$, $-NH_2$, or $-OH$;

R_2 , R_3 , R_4 , R_5 , and R_6 are each independently selected from the group consisting of H , halogen, hydroxyl, alkyl, alkylhydroxy, alkoxy, or phenyl; or a pair of R_2 and R_3 , R_3 and R_4 , R_4 and R_5 , and R_5 and R_6 together are $-(CH)_4-$ to form a naphthyl group;

R_7 is H , alkyl, phenyl, alkylphenyl, or alkylcarboxy; and

A is selected from the group consisting of:

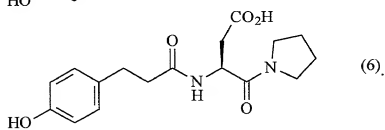
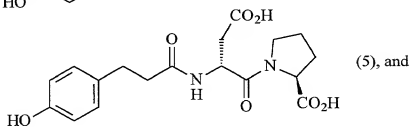
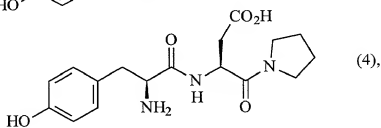
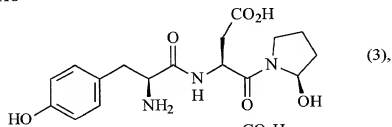
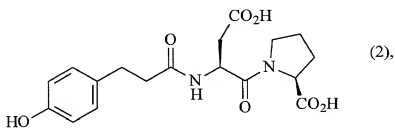
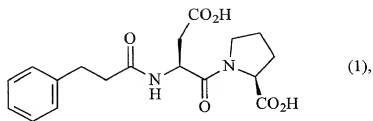


wherein R_8 is H , alkylhydroxy, or carboxy;

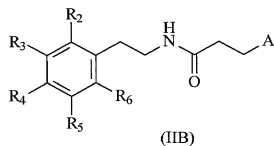
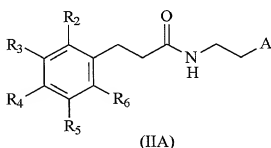
subject to the proviso that at least one of R_7 and R_8 is carboxy or alkylcarboxy;

and subject to the proviso that when R_1 is $-NH_2$, then one of R or R_8 is not carboxy or alkylcarboxy.

30. A compound according to claim 29, said compound selected from the group consisting of:



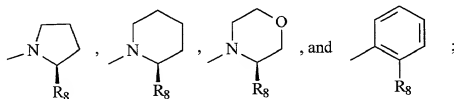
31. A method for controlling a pest, comprising administering to said pest a pesticidally effective amount of a pesticidal compound of **Formula IIA** or **Formula IIB**:



wherein:

R_2 , R_3 , R_4 , R_5 , and R_6 are each independently selected from the group consisting of H, halogen, hydroxyl, alkyl, alkylhydroxy, alkoxy, or phenyl;
or a pair of R_2 and R_3 , R_3 and R_4 , R_4 and R_5 , and R_5 and R_6 together are $-(CH_2)_4-$ to form a naphthyl group; and

A is selected from the group consisting of carboxy;



wherein R_8 is carboxy or alkylcarboxy.

32. A method according to claim 31, wherein said pest is an insect pest.

33. A method according to claim 31, wherein said pest is an insect selected from the group consisting of coleopterans, lepidopterans, and dipterans.

34. A method according to claim 31, wherein said pest is a blood-sucking insect.

35. A method according to claim 31, wherein said pest is an insect of the suborder Nematocera.

36. A method according to claim 31, wherein said pest is an insect of the family Colicidae.

37. A method according to claim 31, wherein said pest is an insect of a subfamily selected from the group consisting of Culicinae, Corethrinae, Ceratopogonidae and Simuliidae.

38. A method according to claim 31, wherein said pest is an insect of a genus selected from the group consisting of *Culex*, *Theobaldia*, *Aedes*, *Anopheles*, *Aedes*, *Forcipomyia*, *Culicoides* and *Helea*.

39. A method according to claim 31, wherein said pest is an insect species selected from the group consisting of: *Aedes aegypti*, *Culex quinquefasciatus*, *Anopheles albimanus*, *Anopheles quadrimaculatus*, *Lutzomyia anthrophora*, *Culicoides variipennis*, *Stomoxys calcitrans*, *Musca domestica*, *Ctenocephalides felix*, and *Heliothis virescens*.

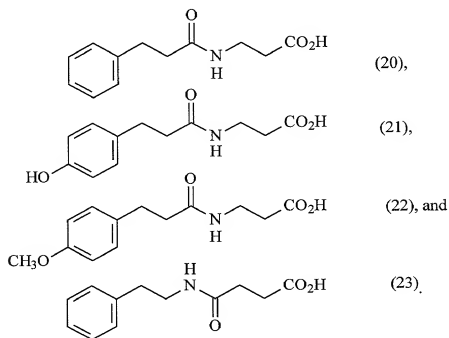
40. A method according to claim 31, wherein said pest is selected from the group consisting of flies, fleas, ticks, and lice.

41. A method according to claim 31, wherein said pest is a mosquito.

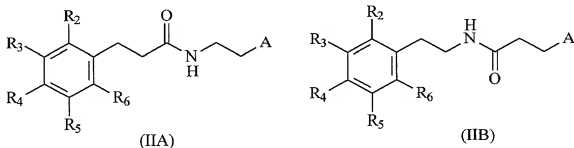
42. A method according to claim 31, wherein said pest is selected from the group consisting of beetles, caterpillars, and mites.

43. A method according to claim 31, wherein said pest is selected from the group consisting of ants and cockroaches.

44. A method according to claim 31, wherein said compound of **Formula IIA** or **Formula IIB** is selected from the group consisting of:

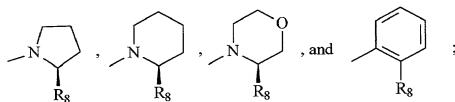


45. A method of initiating a TMOF receptor-mediated biological response, comprising contacting to a TMOF receptor *in vivo* or *in vitro* for a time and in an amount sufficient to initiate a TMOF receptor-mediated biological response a compound of **Formula IIA** or **Formula IIB**:



wherein:

R₂, R₃, R₄, R₅, and R₆ are each independently selected from the group consisting of H, halogen, hydroxyl, alkyl, alkylhydroxy, alkoxy, or phenyl;
or a pair of R₂ and R₃, R₃ and R₄, R₄ and R₅, and R₅ and R₆ together are – (CH)₄– to form a naphthyl group; and
A is selected from the group consisting of carboxy;



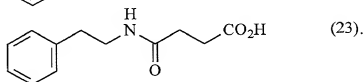
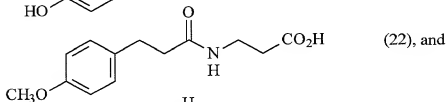
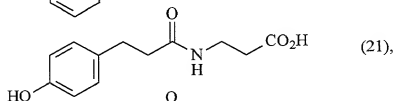
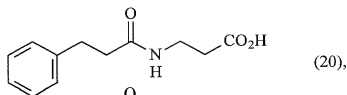
wherein R₈ is carboxy or alkylcarboxy.

46. A method according to claim 45, wherein said biological response is inhibition of biosynthesis of a digestive enzyme.

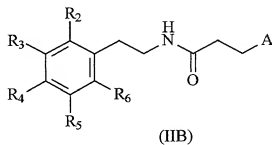
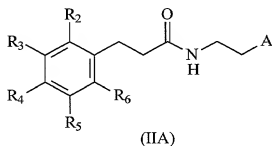
47. A method according to claim 45, wherein said digestive enzyme is trypsin.

48. A method according to claim 45, wherein said contacting step is carried out *in vivo* in an insect pest.

49. A method according to claim 45, wherein said compound is selected from the group consisting of:



50. A pest control composition comprising a pesticidal carrier and a pesticidal compound of **Formula IIA** or **Formula IIB**:

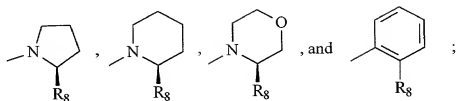


wherein:

R_2 , R_3 , R_4 , R_5 , and R_6 are each independently selected from the group consisting of H, halogen, hydroxyl, alkyl, alkylhydroxy, alkoxy, or phenyl;
 or a pair of R_2 and R_3 , R_3 and R_4 , R_4 and R_5 , and R_5 and R_6 together are –
 $(CH)_4$ - to form a naphthyl group; and

A is selected from the group consisting of carboxy;

- 41 -



wherein R₈ is carboxy or alkylcarboxy.

51. A composition according to claim 50, wherein said composition is a liquid composition.

52. A composition according to claim 50, wherein said pesticidal carrier is included in said composition in an amount from 0.1% to 99.9999% by weight.

53. A composition according to claim 50, wherein said pesticidal carrier comprises an aqueous solution.

54. A composition according to claim 50, wherein said pesticidal carrier comprises an organic solvent.

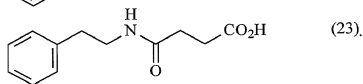
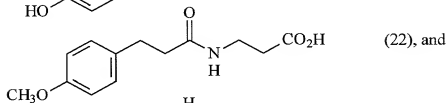
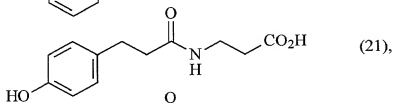
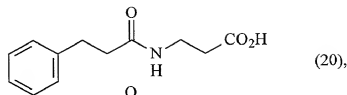
55. A composition according to claim 50, wherein said pesticidal carrier comprises an emulsion.

56. A composition according to claim 50, wherein said composition is a solid composition.

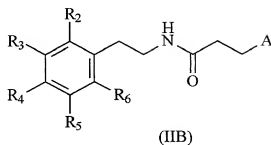
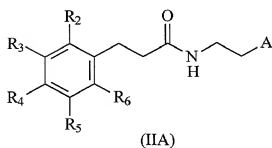
57. A composition according to claim 50, wherein said composition is a bait granule.

58. A composition according to claim 50, wherein said compound of **Formula IIA** or **Formula IIB** is selected from the group consisting of:

- 42 -



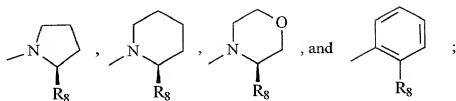
59. A compound of **Formula IIA** or **Formula IIB**:



wherein:

R_2 , R_3 , R_4 , R_5 , and R_6 are each independently selected from the group consisting of H, halogen, hydroxyl, alkyl, alkylhydroxy, alkoxy, or phenyl;
 or a pair of R_2 and R_3 , R_3 and R_4 , R_4 and R_5 , and R_5 and R_6 together are –
 (CH)₄– to form a naphthyl group; and
 A is selected from the group consisting of carboxy;

- 43 -



wherein R_8 is carboxy or alkylcarboxy.

60. A compound according to claim 59 selected from the group consisting of:

